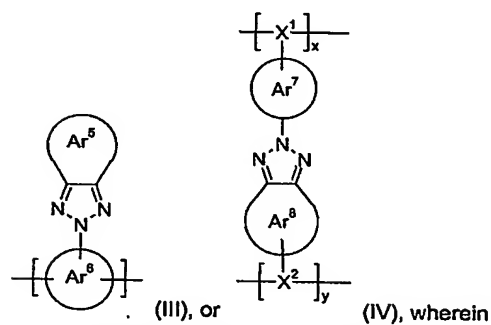
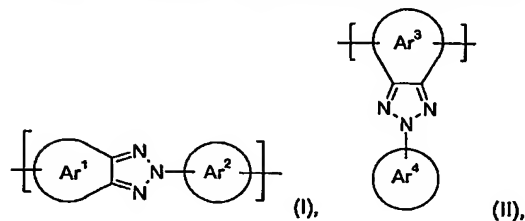


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Claims

1. A polymer comprising a repeating unit of the formula

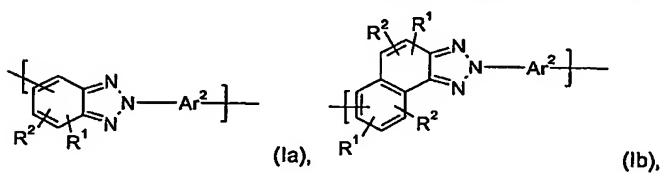


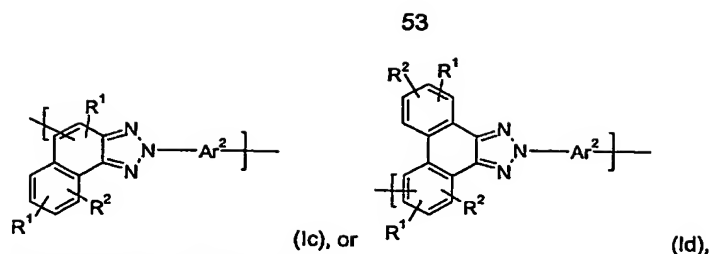
x and y are independently of each other 0 or 1,

X¹ and X² are independently of each other a divalent linking group,

Ar¹, Ar², Ar³, Ar⁴, Ar⁵, Ar⁶, Ar⁷ and Ar⁸ are independently of each other an aryl group, or a heteroaryl group, which can optionally be substituted, especially a C₆-C₃₀aryl group, or a C₂-C₂₀heteroaryl group, which can optionally be substituted.

2. A polymer according to claim 1, comprising a repeating unit of the formula

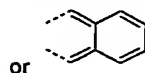




wherein Ar^2 is as defined in claim 1,

R^1 and R^2 are independently of each other H, halogen, SO_3^- , C_1-C_{18} alkyl, C_1-C_{18} alkyl which is substituted by E and/or interrupted by D, C_1-C_{18} perfluoroalkyl, C_6-C_{24} aryl, C_6-C_{24} aryl which is substituted by G, C_2-C_{20} heteroaryl, C_2-C_{20} heteroaryl which is substituted by G, C_2-C_{18} alkenyl, C_2-C_{18} alkynyl, C_1-C_{18} alkoxy, C_1-C_{18} alkoxy which is substituted by E and/or interrupted by D, C_7-C_{25} aralkyl, or $-CO-R^{28}$,

or two substituents R^1 and R^2 , which are adjacent to each other, are a group



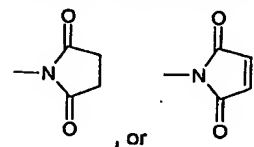
or

D is $-CO-$; $-COO-$; $-S-$; $-SO-$; $-SO_2-$; $-O-$; $-NR^{25}-$; $-SiR^{30}R^{31}-$; $-POR^{32}-$; $-CR^{23}=CR^{24}-$; or $-C\equiv C-$; and

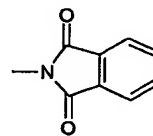
E is $-OR^{29}$; $-SR^{29}$; $-NR^{25}R^{26}$; $-COR^{28}$; $-COOR^{27}$; $-CONR^{25}R^{26}$; $-CN$; $-OCOOR^{27}$; or halogen; G is E, or C_1-C_{18} alkyl, wherein

R^{23} , R^{24} , R^{25} and R^{26} are independently of each other H; C_6-C_{18} aryl; C_6-C_{18} aryl which is substituted by C_1-C_{18} alkyl, or C_1-C_{18} alkoxy; C_1-C_{18} alkyl; or C_1-C_{18} alkyl which is interrupted by $-O-$; or

R^{25} and R^{26} together form a five or six membered ring, in particular



R^{27} and R^{28} are independently of each other H; C_6-C_{18} aryl; C_6-C_{18} aryl which is substituted by C_1-C_{18} alkyl, or C_1-C_{18} alkoxy; C_1-C_{18} alkyl; or C_1-C_{18} alkyl which is interrupted by $-O-$,



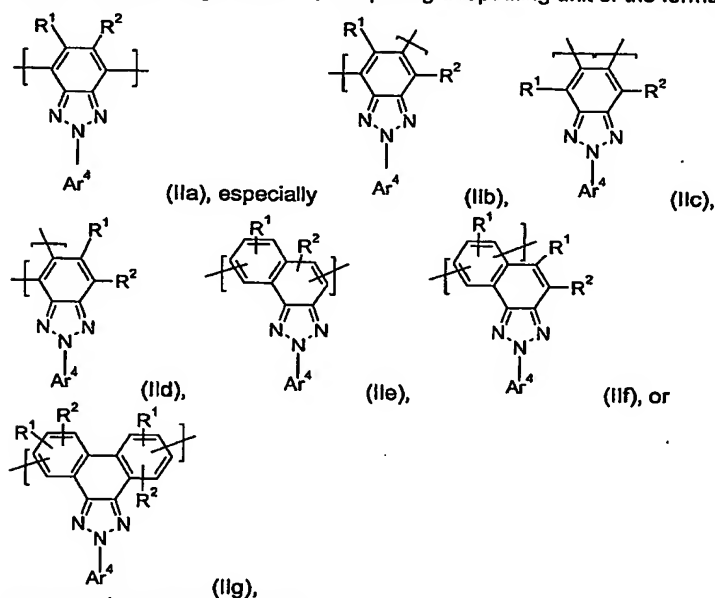
54

R^{29} is H; C_6-C_{18} aryl; C_6-C_{18} aryl, which is substituted by C_1-C_{18} alkyl, or C_1-C_{18} alkoxy; C_1-C_{18} alkyl; or C_1-C_{18} alkyl which is interrupted by $-O-$,

R^{30} and R^{31} are independently of each other C_1-C_{18} alkyl, C_6-C_{18} aryl, or C_6-C_{18} aryl, which is substituted by C_1-C_{18} alkyl, and

5 R^{32} is C_1-C_{18} alkyl, C_6-C_{18} aryl, or C_6-C_{18} aryl, which is substituted by C_1-C_{18} alkyl.

3. A polymer according to claim 1, comprising a repeating unit of the formula



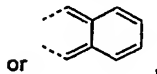
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wherein Ar^4 is as defined in claim 1,

R^1 and R^2 are independently of each other H, halogen, SO_3^- , C_1-C_{18} alkyl, C_1-C_{18} alkyl which is substituted by E and/or interrupted by D, C_1-C_{18} perfluoroalkyl, C_6-C_{24} aryl, C_6-C_{24} aryl which is substituted by G, C_2-C_{20} heteroaryl, C_2-C_{20} heteroaryl which is substituted by G, C_2-C_{18} alkenyl, C_2-C_{18} alkynyl, C_1-C_{18} alkoxy, C_1-C_{18} alkoxy which is substituted by E and/or interrupted by D, C_7-C_{25} aralkyl, or $-CO-R^{28}$,

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or two substituents R^1 and R^2 , which are adjacent to each other, are a group

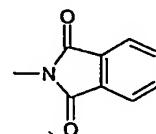


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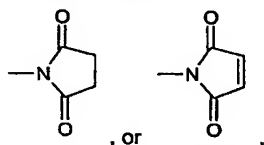
D is $-\text{CO}-$; $-\text{COO}-$; $-\text{S}-$; $-\text{SO}-$; $-\text{SO}_2-$; $-\text{O}-$; $-\text{NR}^{25}-$; $-\text{SiR}^{30}\text{R}^{31}-$; $-\text{POR}^{32}-$; $-\text{CR}^{23}=\text{CR}^{24}-$; or $-\text{C}\equiv\text{C}-$; and

E is $-\text{OR}^{29}$; $-\text{SR}^{29}$; $-\text{NR}^{25}\text{R}^{26}$; $-\text{COR}^{28}$; $-\text{COOR}^{27}$; $-\text{CONR}^{26}\text{R}^{28}$; $-\text{CN}$; $-\text{OCOOR}^{27}$; or halogen; G is E, or $\text{C}_1\text{-C}_{18}$ alkyl, wherein

5 R^{23} , R^{24} , R^{25} and R^{28} are independently of each other H; $\text{C}_6\text{-C}_{18}$ aryl; $\text{C}_6\text{-C}_{18}$ aryl which is substituted by $\text{C}_1\text{-C}_{18}$ alkyl, or $\text{C}_1\text{-C}_{18}$ alkoxy; $\text{C}_1\text{-C}_{18}$ alkyl; or $\text{C}_1\text{-C}_{18}$ alkyl which is interrupted by $-\text{O}-$; or



R^{25} and R^{28} together form a five or six membered ring, in particular



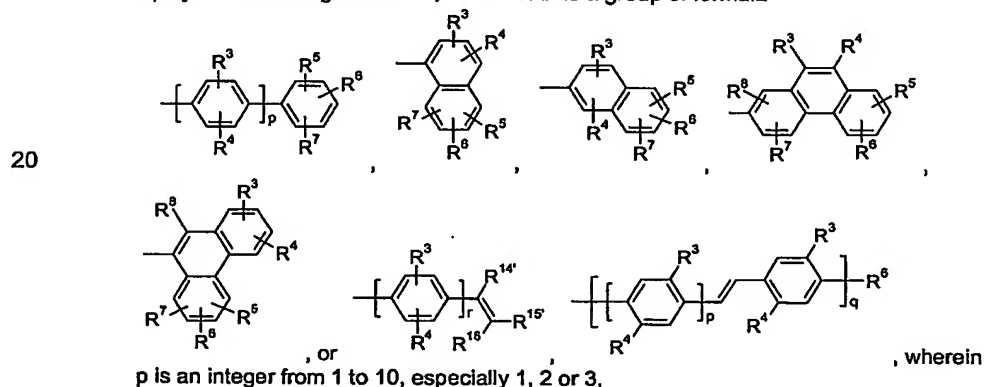
10 R^{27} and R^{28} are independently of each other H; $\text{C}_6\text{-C}_{18}$ aryl; $\text{C}_6\text{-C}_{18}$ aryl which is substituted by $\text{C}_1\text{-C}_{18}$ alkyl, or $\text{C}_1\text{-C}_{18}$ alkoxy; $\text{C}_1\text{-C}_{18}$ alkyl; or $\text{C}_1\text{-C}_{18}$ alkyl which is interrupted by $-\text{O}-$,

R^{29} is H; $\text{C}_6\text{-C}_{18}$ aryl; $\text{C}_6\text{-C}_{18}$ aryl, which is substituted by $\text{C}_1\text{-C}_{18}$ alkyl, or $\text{C}_1\text{-C}_{18}$ alkoxy; $\text{C}_1\text{-C}_{18}$ alkyl; or $\text{C}_1\text{-C}_{18}$ alkyl which is interrupted by $-\text{O}-$,

15 R^{30} and R^{31} are independently of each other $\text{C}_1\text{-C}_{18}$ alkyl, $\text{C}_6\text{-C}_{18}$ aryl, or $\text{C}_6\text{-C}_{18}$ aryl, which is substituted by $\text{C}_1\text{-C}_{18}$ alkyl, and

R^{32} is $\text{C}_1\text{-C}_{18}$ alkyl, $\text{C}_6\text{-C}_{18}$ aryl, or $\text{C}_6\text{-C}_{18}$ aryl, which is substituted by $\text{C}_1\text{-C}_{18}$ alkyl.

4. A polymer according to claim 3, wherein Ar^4 is a group of formula



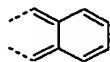
56

q is an integer from 1 to 10, especially 1, 2 or 3,

r is an integer of 0 to 10, in particular 0, 1, 2 or 3,

R^3 to R^8 are independently of each other H, halogen, SO_3^- , C_1-C_{18} alkyl, C_1-C_{18} alkyl which is substituted by E and/or interrupted by D, C_6-C_{24} aryl, C_6-C_{24} aryl which is substituted by G, C_2-C_{20} heteroaryl, C_2-C_{20} heteroaryl which is substituted by G, C_2-C_{18} alkenyl, C_2-C_{18} alkynyl, C_1-C_{18} alkoxy, C_1-C_{18} alkoxy which is substituted by E and/or interrupted by D, C_7-C_{25} aralkyl, or $-CO-R^{28}$, or

two substituents R^3 to R^8 , which are adjacent to each other, are a group , or



, and

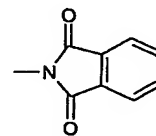
R^{14} and R^{15} are independently of each other H, C_1-C_{18} alkyl, C_1-C_{18} alkyl which is substituted by E and/or interrupted by D, C_6-C_{24} aryl, C_6-C_{24} aryl which is substituted by G, C_2-C_{20} heteroaryl, or C_2-C_{20} heteroaryl which is substituted by G,

R^{16} is C_1-C_{18} alkyl, C_1-C_{18} alkyl which is substituted by E and/or interrupted by D, C_6-C_{24} aryl, which optionally can be substituted, wherein

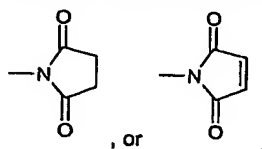
D is $-CO-$; $-COO-$; $-S-$; $-SO-$; $-SO_2-$; $-O-$; $-NR^{25}-$; $-SiR^{30}R^{31}-$; $-POR^{32}-$; $-CR^{23}=CR^{24}-$; or $-C\equiv C-$; and

E is $-OR^{29}$; $-SR^{29}$; $-NR^{25}R^{26}$; $-COR^{28}$; $-COOR^{27}$; $-CONR^{25}R^{26}$; $-CN$; $-OCOOR^{27}$; or halogen; G is E, or C_1-C_{18} alkyl, wherein

R^{23} , R^{24} , R^{25} and R^{26} are independently of each other H; C_6-C_{18} aryl; C_6-C_{18} aryl which is substituted by C_1-C_{18} alkyl, C_1-C_{18} alkoxy; C_1-C_{18} alkyl; or C_1-C_{18} alkyl which is interrupted by $-O-$; or



R^{25} and R^{26} together form a five or six membered ring, in particular



, or

R^{27} and R^{28} are independently of each other H; C_6-C_{18} aryl; C_6-C_{18} aryl which is substituted by C_1-C_{18} alkyl, or C_1-C_{18} alkoxy; C_1-C_{18} alkyl; or C_1-C_{18} alkyl which is interrupted by $-O-$,

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R^{29} is H; C_6-C_{18} aryl; C_6-C_{18} aryl, which is substituted by C_1-C_{18} alkyl, C_1-C_{18} alkoxy; C_1-C_{18} alkyl; or C_1-C_{18} alkyl which is interrupted by $-O-$,

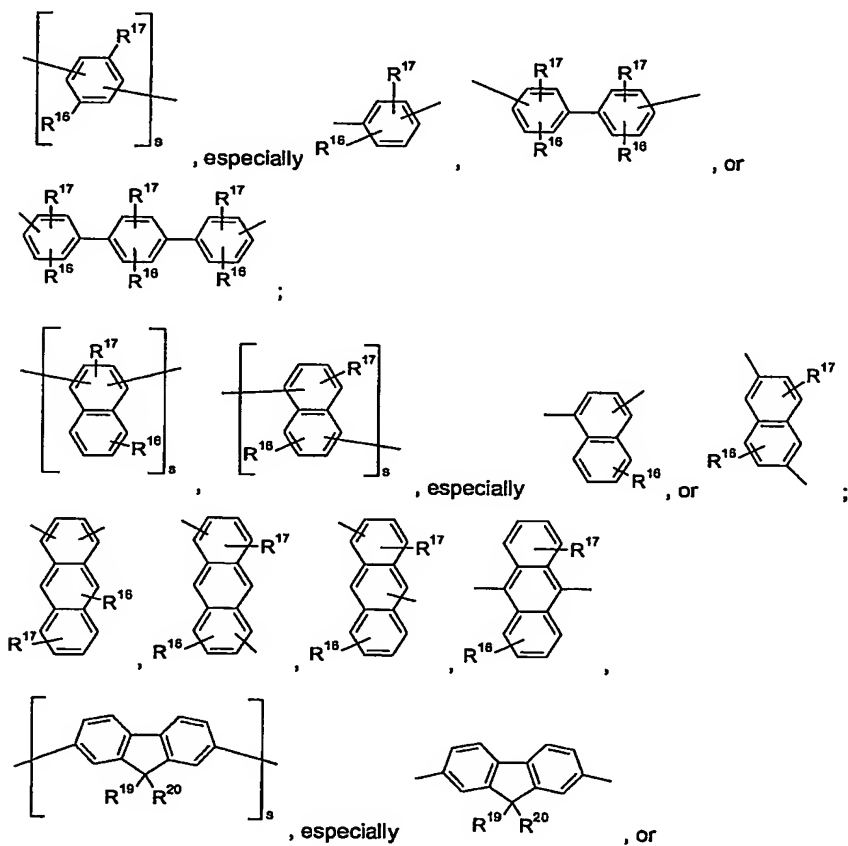
R^{30} and R^{31} are independently of each other C_1-C_{18} alkyl, C_6-C_{18} aryl, or C_6-C_{18} aryl, which is substituted by C_1-C_{18} alkyl, and

R^{32} is C_1-C_{18} alkyl, C_6-C_{18} aryl, or C_6-C_{18} aryl, which is substituted by C_1-C_{18} alkyl.

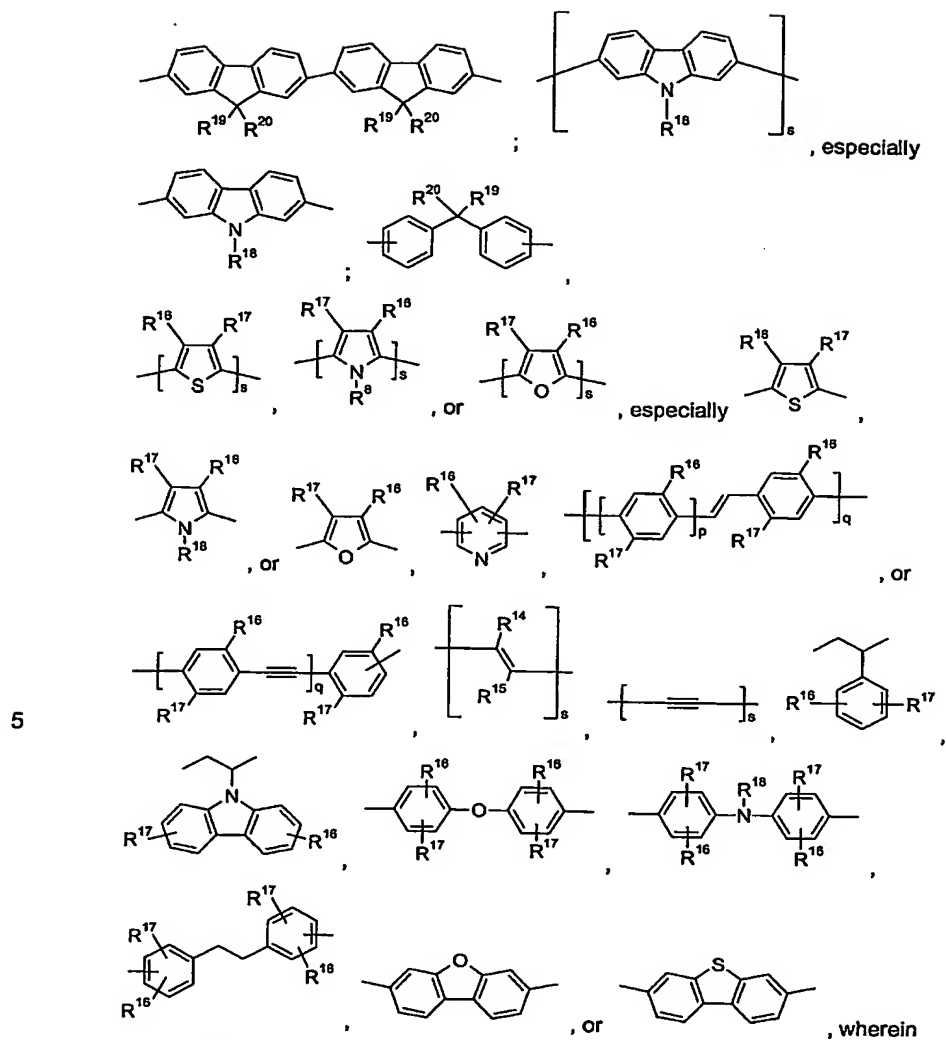
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5. A polymer according to any of claims 1 to 4, comprising an additional repeating unit T which is selected from the group consisting of

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p is an integer from 1 to 10, especially 1, 2 or 3,

q is an integer from 1 to 10, especially 1, 2 or 3,

s is an integer from 1 to 10, especially 1, 2 or 3,

R¹⁴ and R¹⁵ are independently of each other H, C₁-C₁₈alkyl, C₁-C₁₈alkyl which is substituted by E and/or interrupted by D, C₆-C₂₄aryl, C₆-C₂₄aryl which is substituted by G, or C₂-C₂₀heteroaryl, C₂-C₂₀heteroaryl which is substituted by G,

R¹⁶ and R¹⁷ are independently of each other H, C₁-C₁₈alkyl, C₁-C₁₈alkyl which is substituted by E and/or interrupted by D, C₆-C₂₄aryl, C₆-C₂₄aryl which is substituted by G, C₂-C₂₀heteroaryl, or C₂-C₂₀heteroaryl which is substituted by G, C₂-C₁₈alkenyl, C₂-C₁₈alkynyl, C₁-C₁₈alkoxy, C₁-C₁₈alkoxy which is substituted by E and/or interrupted by D, C₇-C₂₅aralkyl, or -CO-R²⁸.

R¹⁸ is H; C₆-C₁₈aryl; C₆-C₁₈aryl which is substituted by C₁-C₁₈alkyl, or C₁-C₁₈alkoxy; C₁-C₁₈alkyl; or C₁-C₁₈alkyl which is interrupted by -O-;

R¹⁹ and R²⁰ are independently of each other C₁-C₁₈alkyl, C₁-C₁₈alkyl which is substituted by E and/or interrupted by D, C₆-C₂₄aryl, C₆-C₂₄aryl which is substituted by G, C₂-C₂₀heteroaryl, C₂-C₂₀heteroaryl which is substituted by G, C₂-C₁₈alkenyl, C₂-C₁₈alkynyl, C₁-C₁₈alkoxy, C₁-C₁₈alkoxy which is substituted by E and/or interrupted by D, or C₇-C₂₅aralkyl, or

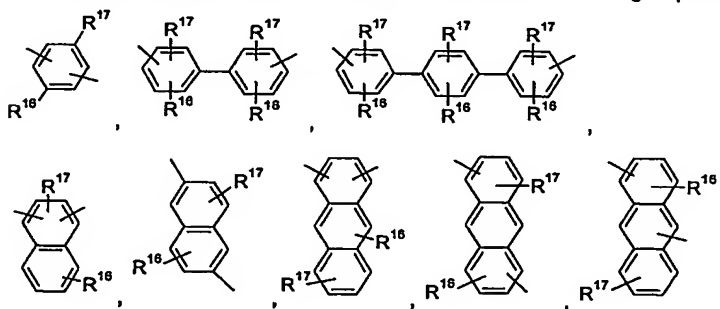
R¹⁹ and R²⁰ together form a group of formula =CR¹⁰⁰R¹⁰¹, wherein

R¹⁰⁰ and R¹⁰¹ are independently of each other H, C₁-C₁₈alkyl, C₁-C₁₈alkyl which is substituted by E and/or interrupted by D, C₆-C₂₄aryl, C₆-C₂₄aryl which is substituted by G, C₂-C₂₀heteroaryl, or C₂-C₂₀heteroaryl which is substituted by G, or

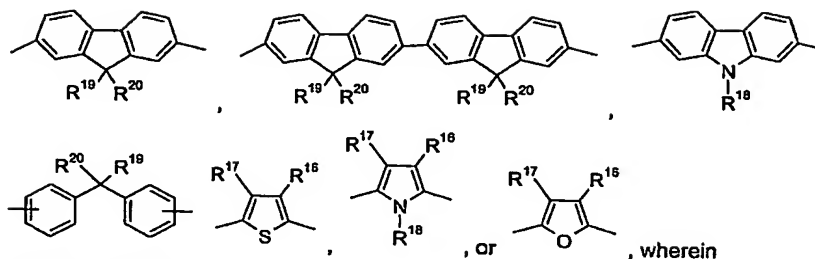
R¹⁹ and R²⁰ form a ring, especially a five- or six-membered ring, which can optionally be substituted, and

D, E and G are as defined in claim 2.

6. A polymer according to claim 5, wherein T is selected from the group consisting of



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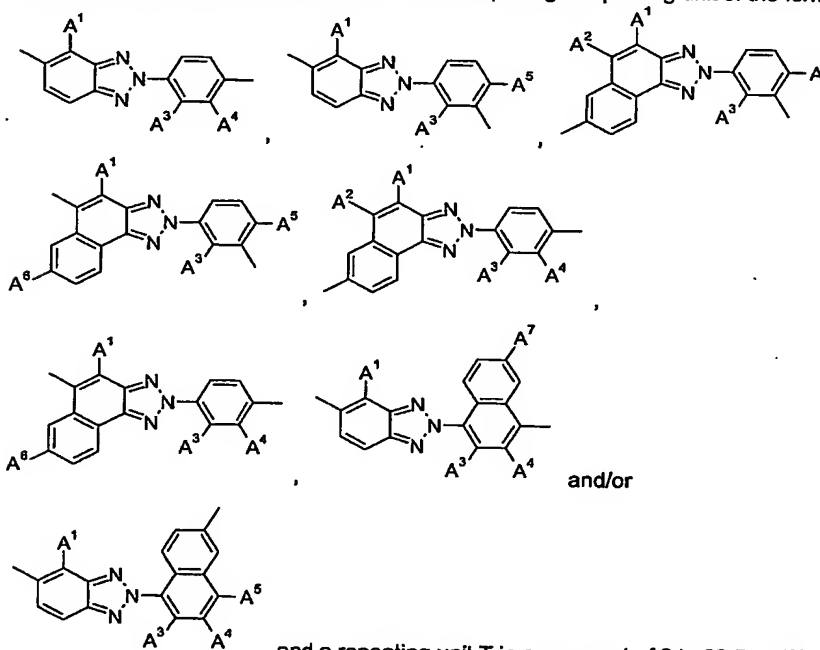


R^{18} is C_1 - C_{18} alkyl, and

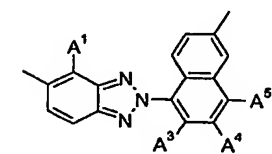
R^{19} and R^{20} are independently of each other C_1 - C_{18} alkyl, especially C_4 - C_{12} alkyl, which can be interrupted by one or two oxygen atoms, or

R^{19} and R^{20} form a five or six membered carbocyclic ring, which optionally can be substituted by C_1 - C_4 alkyl.

7. A polymer according to any of claims 1 to 6, comprising a repeating unit of the formula



and/or



, and a repeating unit T in an amount of 0 to 99.5 mol%, especially in an amount of 40 to 80 mol%, wherein the sum of the repeating unit(s) and the co-monomer is 100 mol%, wherein A^1 is hydrogen, or C_1 - C_{18} alkyl,

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A² is hydrogen, or C₁-C₁₈alkyl,

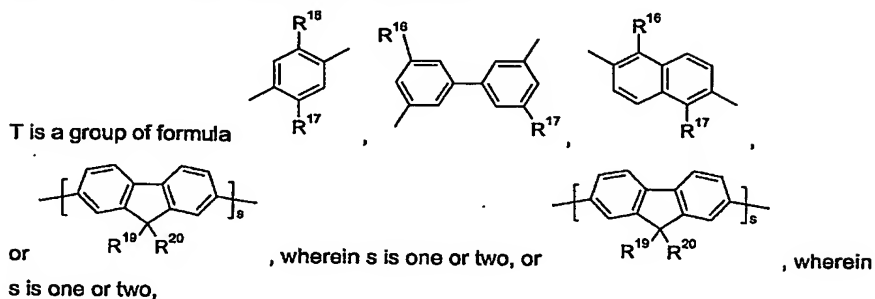
A³ is hydrogen, or C₁-C₁₈alkoxy, or C₁-C₁₈alkyl,

A⁴ is hydrogen, or C₁-C₁₈alkyl,

A⁵ is hydrogen, C₁-C₁₈alkyl, di(C₁-C₁₈alkyl)amino, or C₁-C₁₈alkoxy,

5 A⁶ is hydrogen, or C₁-C₁₈alkyl,

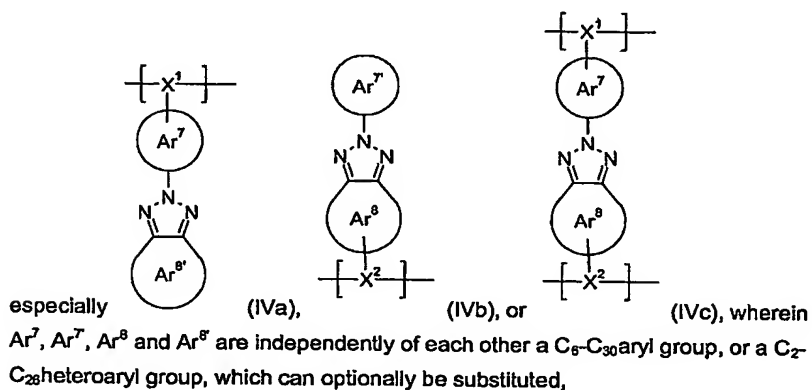
A⁷ is hydrogen, C₁-C₁₈alkyl or C₁-C₁₈alkoxy, and



10 R¹⁸ and R¹⁷ are independently of each other C₁-C₁₈alkyl, especially C₄-C₁₂alkyl, especially hexyl, heptyl, 2-ethylhexyl, and octyl, which can be interrupted by one or two oxygen atoms, C₁-C₁₈alkoxy, especially C₄-C₁₂alkoxy, especially hexyloxy, heptyloxy, 2-ethylhexyloxy, and octyloxy, which can be interrupted by one or two oxygen atoms and R¹⁹ and R²⁰ are independently of each other C₁-C₁₈alkyl, especially C₄-C₁₂alkyl,

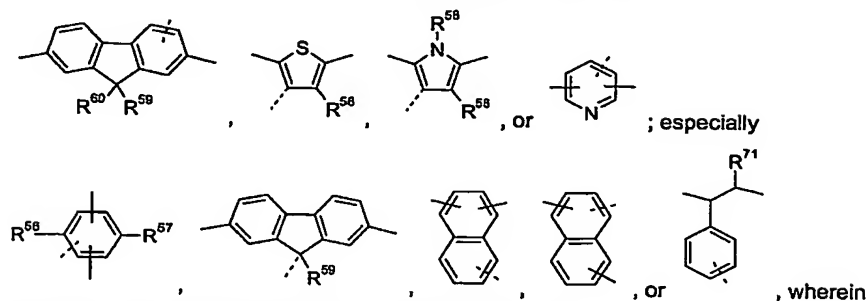
15 especially hexyl, heptyl, 2-ethylhexyl, and octyl, which can be interrupted by one or two oxygen atoms.

8. A polymer according to claim 1, comprising a repeating unit of the formula IV,



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X¹ and X² are independently of each other a group of the formula



the dotted line represent the bond to the benzotriazole unit,

5 R⁵⁶ and R⁵⁷ are independently of each other H, C₁-C₁₈alkyl, C₁-C₁₈alkyl which is substituted by E and/or interrupted by D, C₆-C₂₄aryl, C₆-C₂₄aryl which is substituted by G, C₂-C₂₀heteroaryl, C₂-C₂₀heteroaryl which is substituted by G, C₂-C₁₈alkenyl, C₂-C₁₈alkynyl, C₁-C₁₈alkoxy, C₁-C₁₈alkoxy which is substituted by E and/or interrupted by D, or C₇-C₂₅aralkyl,

10 R⁵⁸ is H, C₁-C₁₈alkyl, C₁-C₁₈alkyl which is substituted by E and/or interrupted by D, C₆-C₂₄aryl, or C₇-C₂₅aralkyl,

15 R⁵⁹ and R⁶⁰ are independently of each other H, C₁-C₁₈alkyl, C₁-C₁₈alkyl which is substituted by E and/or interrupted by D, C₆-C₂₄aryl, C₆-C₂₄aryl which is substituted by G, C₂-C₂₀heteroaryl, C₂-C₂₀heteroaryl which is substituted by G, C₂-C₁₈alkenyl, C₂-C₁₈alkynyl, C₁-C₁₈alkoxy, C₁-C₁₈alkoxy which is substituted by E and/or interrupted by D, or C₇-C₂₅aralkyl, or

R⁵⁹ and R⁶⁰ form a ring, especially a five- or six-membered ring, which can optionally be substituted,

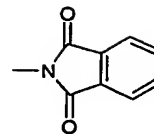
R⁷¹ is H, C₁-C₁₈alkyl, -C≡N, -CONR²⁵R²⁶ or -COOR²⁷,

20 D is -CO-; -COO-; -OCOO-; -S-; -SO-; -SO₂-; -O-; -NR²⁵-; -SiR³⁰R³¹-; -POR³²-; -CR²³=CR²⁴-; or -C≡C-; and

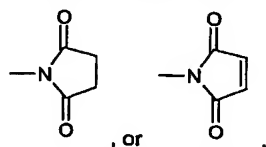
E is -OR²⁹; -SR²⁹; -NR²⁵R²⁶; -COR²⁸; -COOR²⁷; -CONR²⁵R²⁶; -CN; -OCOOR²⁷; or halogen; G is E, or C₁-C₁₈alkyl, wherein

25 R²³, R²⁴, R²⁵ and R²⁶ are independently of each other H; C₆-C₁₈aryl; C₆-C₁₈aryl which is substituted by C₁-C₁₈alkyl, C₁-C₁₈alkoxy; C₁-C₁₈alkyl; or C₁-C₁₈alkyl which is interrupted by -O-; or

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R^{25} and R^{26} together form a five or six membered ring, in particular



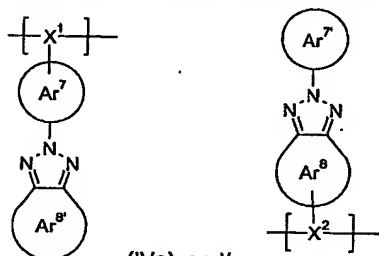
R^{27} and R^{28} are independently of each other H; C_6-C_{18} aryl; C_6-C_{18} aryl which is substituted by C_1-C_{18} alkyl, or C_1-C_{18} alkoxy; C_1-C_{18} alkyl; or C_1-C_{18} alkyl which is interrupted by $-O-$, and

R^{29} is H; C_6-C_{18} aryl; C_6-C_{18} aryl which is substituted by C_1-C_{18} alkyl, C_1-C_{18} alkoxy; C_1-C_{18} alkyl; or C_1-C_{18} alkyl which is interrupted by $-O-$,

R^{30} and R^{31} are independently of each other C_1-C_{18} alkyl, C_6-C_{18} aryl, or C_6-C_{18} aryl, which is substituted by C_1-C_{18} alkyl, and

R^{32} is C_1-C_{18} alkyl, C_6-C_{18} aryl, or C_6-C_{18} aryl, which is substituted by C_1-C_{18} alkyl.

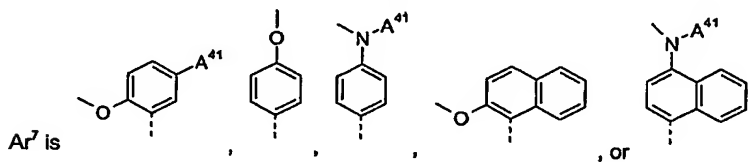
9. A polymer according to claim 8, comprising a repeating unit of the formula



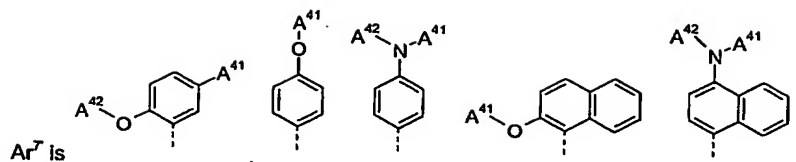
(IVa), and/or

(IVb), and a repeating unit T in an amount of 0

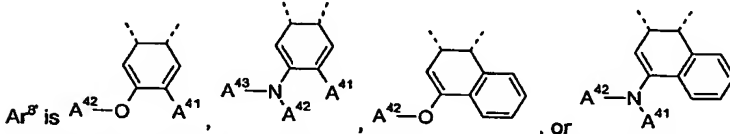
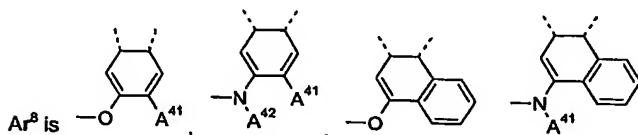
to 99.5 mol%, especially in an amount of 40 to 80 mol%, wherein the sum of the repeating unit(s) and the co-monomer is 100 mol%, wherein



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wherein the dotted line is the bond to the nitrogen atom of the benzotriazole unit,



5

wherein the dotted lines are the bonds to the nitrogen atoms of the benzotriazole unit,
A⁴¹ is hydrogen, C₁-C₁₈alkoxy, or C₁-C₁₈alkyl, such as methyl, ethyl, n-propyl, iso-propyl, n-butyl, isobutyl, sec-butyl, t-butyl, 2-methylbutyl, n-pentyl, isopentyl, n-hexyl, 2-ethylhexyl, or n-heptyl,

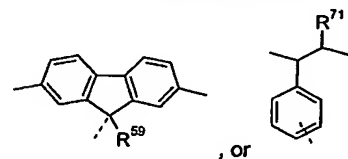
10

A⁴² is hydrogen, or C₁-C₁₈alkyl, such as methyl, ethyl, n-propyl, iso-propyl, n-butyl, isobutyl, sec-butyl, t-butyl, 2-methylbutyl, n-pentyl, isopentyl, n-hexyl, 2-ethylhexyl, or n-heptyl,

15

A⁴³ is hydrogen, or C₁-C₁₈alkyl, such as methyl, ethyl, n-propyl, iso-propyl, n-butyl, isobutyl, sec-butyl, t-butyl, 2-methylbutyl, n-pentyl, isopentyl, n-hexyl, 2-ethylhexyl, or n-heptyl,

X¹ and X² are independently of each other a group of the formula



wherein the dotted line represent the bond to the benzotriazole unit,

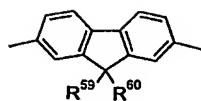
R⁷¹ is H, C₁-C₁₈alkyl, -C≡N, or -COOR²⁷, wherein

20

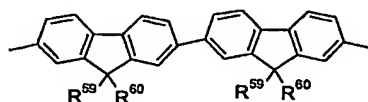
R²⁷ is H; or C₁-C₁₈alkyl, which can be interrupted by one or more oxygen atoms, especially C₄-C₁₂alkyl, which can be interrupted by one or two oxygen atoms, and

65

T is a group of formula



, or



, wherein R^{59} and R^{60} are independently of each other C_1 - C_{18} alkyl, especially C_4 - C_{12} alkyl, which can be interrupted by one or two oxygen atoms.

5

10. An optical device or a component therefore, comprising a substrate and a polymer according to any of claims 1 to 9.

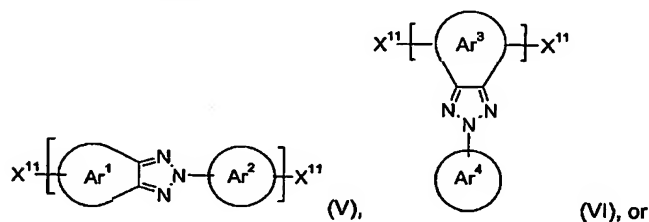
10 11. An optical device according to claim 10, wherein the optical device comprises an electroluminescent device.

12. An optical device according to claim 11, wherein the electroluminescent device comprises

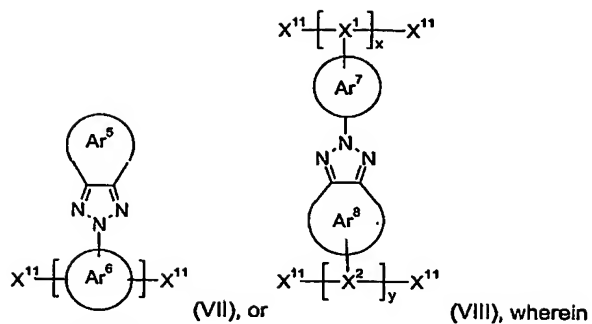
- 15 (a) a reflective or transmissive anode
 (b) a reflective or transmissive cathode
 (c) an emissive layer comprising a polymer according to any of claims 1 to 9 located between the electrodes, and optionally
 (d) a charge injecting layer for injecting positive charge carriers, and
 (e) a charge injecting layer for injecting negative charge carriers.

20

13. A monomer of the formula

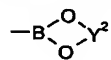


66



x and y are 0 or 1,

Ar^1 , Ar^2 , Ar^3 , Ar^4 , Ar^5 , Ar^6 , Ar^7 and Ar^8 are independently of each other an aryl group, or a heteroaryl group, which optionally can be substituted, especially a C_6 - C_{30} aryl group, or a C_2 - C_{26} heteroaryl group, which can optionally be substituted, and X^{11} is independently in each occurrence a halogen atom, or $-B(OH)_2$, $-B(OY^1)_2$ or



, wherein Y^1 is independently in each occurrence a C_1 - C_{10} alkyl group and Y^2 is independently in each occurrence a C_2 - C_{10} alkylene group, such as $-CY^3Y^4-CY^5Y^6-$, or $-CY^7Y^8-CY^9Y^{10}-CY^{11}Y^{12}-$, wherein Y^3 , Y^4 , Y^5 , Y^6 , Y^7 , Y^8 , Y^9 , Y^{10} , Y^{11} and Y^{12} are independently of each other hydrogen, or a C_1 - C_{10} alkyl group, especially $-C(CH_3)_2C(CH_3)_2-$, or $-C(CH_3)_2CH_2C(CH_3)_2-$.